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<110> Estell, David A.
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<140> US 09/462,845

<141> 2000-01-13

<150> PCT/US98/14647

<151> 1998-07-14

<150> EP 97305237.7

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425 Ile Leu Asn Ile His Gly Gly Pro His Met Met Tyr Gly His Thr Tyr 445 440 435 Phe His Glu Phe Gln Val Leu Ala Ala Lys Gly Tyr Ala Val Val Tyr 460 455 Ile Asn Pro Arg Gly Ser His Gly Tyr Gly Gln Glu Phe Val Asn Ala 475 470 Val Arg Gly Asp Tyr Gly Gly Lys Asp Tyr Asp Asp Val Met Gln Ala 490 485 Val Asp Glu Ala Ile Lys Arg Asp Pro His Ile Asp Pro Lys Arg Leu 505 Gly Val Thr Gly Gly Ser Tyr Gly Gly Phe Met Thr Asn Trp Ile Val 525 520 Gly Gln Thr Asn Arg Phe Lys Ala Ala Val Thr Gln Arg Ser Ile Ser 535 Asn Trp Ile Ser Phe His Gly Val Ser Asp Ile Gly Tyr Phe Phe Thr 555 550 Asp Trp Gln Leu Glu His Asp Met Phe Glu Asp Thr Glu Lys Leu Trp 570 565 Asp Arg Ser Pro Leu Lys Tyr Ala Ala Asn Val Glu Thr Pro Leu Leu 585 580 Ile Leu His Gly Glu Arg Asp Asp Arg Cys Pro Ile Glu Gln Ala Glu 600 Gln Leu Phe Ile Ala Leu Lys Lys Met Gly Lys Glu Thr Lys Leu Val 615 Arg Phe Pro Asn Ala Ser His Asn Leu Ser Arg Thr Gly His Pro Arg 635 630 Gln Arg Ile Lys Arg Leu Asn Tyr Ile Ser Ser Trp Phe Asp Gln His 645 Leu

> <210> 3 <211> 818 <212> PRT <213> Bacillus subtilis

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•															
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Ile		Ile	Tyr	Ser	Ala			Lys	Lys	Thr	Ile 220		Ala	Val	Thr
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Met	Arg	275 Ser	Ile	Lys	Tyr	Pro	280 Lys	Ser	Gly	Thr	Pro	285 Asn	Pro	His	Ala
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Gly	Lys			565	)				570	)				5/5	
			580	)				585					590		Phe
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625	. Val	. Val			630	g Gly	Thr			635	)				Arg 640
Ser	: Lei			645	Arg	, Leu			650	)				65.	
Sei	Ala	a Ala	a Se	r Lei	а Туг	Gly	Ser	Leu	ı Thi	: Phe	e Val	Asp	Pro	Glr	Lys

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		35	Pro				40					45			Leu	
	5.0	Gly				55					60				e Ile	
65					70					75					80 80	
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Asp Ala Phe Ser Ala Phe Arg Leu Leu Gln Gln His Pro Asn Val Lys 105 100 Lys Asp Arg Ile His Ile Phe Gly Phe Ser Arg Gly Gly Ile Met Gly 125 120 115 Met Leu Thr Ala Ile Glu Met Gly Gly Gln Ala Ala Ser Phe Val Ser 135 Trp Gly Gly Val Ser Asp Met Ile Leu Thr Tyr Glu Glu Arg Gln Asp 155 150 Leu Arg Arg Met Met Lys Arg Val Ile Gly Gly Thr Pro Lys Lys Val 170 Pro Glu Glu Tyr Gln Trp Arg Thr Pro Phe Asp Gln Val Asn Lys Ile 185 180 Gln Ala Pro Val Leu Leu Ile His Gly Glu Lys Asp Gln Asn Val Ser 205 200 Ile Gln His Ser Tyr Leu Leu Glu Glu Lys Leu Lys Gln Leu His Lys 220 215 Pro Val Glu Thr Trp Tyr Tyr Ser Thr Phe Thr His Tyr Phe Pro Pro 235 230 Lys Glu Asn Arg Arg Ile Val Arg Gln Leu Thr Gln Trp Met Lys Asn 245 Arq

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<210> 7 <211> 255 <212> PRT <213> Bacillus subtilis

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 Pro Phe Leu His Ile

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 25

 Ile His Gly Phe Thr Ser Ala Lys Glu His Asn Leu His Ile Ala Tyr 35
 40

 Leu Leu Ala Glu Lys Gly Phe Arg Ala Val Leu Pro Glu Ala Leu His 50
 55

 His Gly Glu Arg Gly Glu Glu Glu Met Ala Val Glu Glu Leu Ala Gly His 65
 70

 Phe Trp Asp Ile Val Leu Asn Glu Ile Glu Glu Glu Ile Gly Val Leu Lys

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			100	•				105				Arg	TTO		
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-	130	-				135					140	Ser			
145					150					155		Ser			160
				165					170			Met		175	
		_	180					185				Gln	190		
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Thr	Arg 210	Lys	Phe	Tyr	Asp	Thr 215	Ile	Lys	Ser	His	Tyr 220	Ser	Glu	Gln	Pro
Glu 225	Arg	Leu	Gln	Phe	Ile 230	Gly	Asp	Glu	Asn	Ala 235	Asp	His	Lys	Val	Pro 240
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<210> 9 <211> 305 <212> PRT <213> Bacillus subtilis

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75 Pro Asn Thr Ile Ile Ile Cys His Gly Val Thr Met Asn Val Leu Asn 90 85 Ser Leu Lys Tyr Met His Leu Phe Leu Asp Leu Gly Trp Asn Val Leu 105 100 Ile Tyr Asp His Arg Arg His Gly Gln Ser Gly Gly Lys Thr Thr Ser 125 120 Tyr Gly Phe Tyr Glu Lys Asp Asp Leu Asn Lys Val Val Ser Leu Leu 135 Lys Asn Lys Thr Asn His Arg Gly Leu Ile Gly Ile His Gly Glu Ser 155 150 Met Gly Ala Val Thr Ala Leu Leu Tyr Ala Gly Ala His Cys Ser Asp 170 165 Gly Ala Asp Phe Tyr Ile Ala Asp Cys Pro Phe Ala Cys Phe Asp Glu 185 180 Gln Leu Ala Tyr Arg Leu Arg Ala Glu Tyr Arg Leu Pro Ser Trp Pro 200 195 Leu Leu Pro Ile Ala Asp Phe Phe Leu Lys Leu Arg Gly Gly Tyr Arg 215 Ala Arg Glu Val Ser Pro Leu Ala Val Ile Asp Lys Ile Glu Lys Pro 235 230 Val Leu Phe Ile His Ser Lys Asp Asp Asp Tyr Ile Pro Val Ser Ser 250 245 Thr Glu Arg Leu Tyr Glu Lys Lys Arg Gly Pro Lys Ala Leu Tyr Ile 265 260 Ala Glu Asn Gly Glu His Ala Met Ser Tyr Thr Lys Asn Arg His Thr 280 Tyr Arg Lys Thr Val Gln Glu Phe Leu Asp Asn Met Asn Asp Ser Thr Glu 305

<210> 10 <211> 318 <212> PRT <213> Bacillus subtilis

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Val Thr Gly Gly Ser Gln Gly Gly Leu Thr Ile Ala Ala Ala Leu Ser Asp Ile Pro Lys Ala Ala Val Ala Asp Tyr Pro Tyr Leu Ser Asn Phe Glu Arg Ala Ile Asp Val Ala Leu Glu Gln Pro Tyr Leu Glu Ile Asn Ser Phe Phe Arg Arg Asn Gly Ser Pro Glu Thr Glu Val Gln Ala Met Lys Thr Leu Ser Tyr Phe Asp Ile Met Asn Leu Ala Asp Arg Val Lys Val Pro Val Leu Met Ser Ile Gly Leu Ile Asp Lys Val Thr Pro Pro Ser Thr Val Phe Ala Ala Tyr Asn His Leu Glu Thr Lys Lys Glu Leu Lys Val Tyr Arg Tyr Phe Gly His Glu Tyr Ile Pro Ala Phe Gln Thr Glu Lys Leu Ala Phe Phe Lys Gln His Leu Lys Gly